

### ABSTRACT OF THE DISCLOSURE

In a step of doping a silicon-based semiconductor film as a TFT active layer such as channel doping or the like, a protective film is formed by a CVD method as a pretreatment so as to prevent the silicon-based semiconductor film from being contaminated and etched. However, in the case of using the protective film formed by the CVD method, the problems in terms of throughput and production cost (an expensive apparatus is required) have been pointed out. The present invention is intended to solve the above-mentioned problems. Instead of the CVD method, a step of forming a chemical oxide film on a silicon-based semiconductor film is introduced as the pretreatment in the step of doping the silicon-based semiconductor film. Alternatively, a step is introduced in which unsaturated bonds present at the surface of the silicon-based semiconductor film are made to terminate with an element (for instance, oxygen) to be bonded with bonding energy higher than that of Si-H bonds. The above-mentioned pretreatment step can prevent the silicon-based semiconductor film from being etched by hydrogen ions used in the doping step.